

COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Blue Ridge Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Dominion Generation
5000 Dominion Boulevard, Glen Allen, Virginia
Permit No. (BRRO-30859)

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Dominion Generation has applied for a Title V Operating Permit for its Altavista Power Station (APS) facility. The Department has reviewed the application and has prepared a draft Significant Modification of the facility's Title V Operating Permit.

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Date:

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David J. Brown

Date:

Regional Director: _____
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Date:

1. FACILITY INFORMATION

Permittee

Dominion Generation
5000 Dominion Boulevard
Glen Allen, VA 23060

Facility

Altavista Power Station
104 Wood Lane
Altavista, VA 24517

County-Plant Identification Number: 51-031-00156

2. SOURCE DESCRIPTION - 2012 NAICS Code: 221 117– Electric power generation

Dominion Generation's Altavista Power Station (APS) manufactures electricity. The power station operates two 394 MMBtu/hr primary, biomass-fired, stoker boilers with associated fuel, ash, and lime handling systems. Each primary boiler has the potential to operate 8,400 hours per year.

Before this current Title V permit modification, the facility was a Title V major source of CO, NO_x, SO₂, and total HAP. This source is located in a designated PSD area for all pollutants (9 VAC 5-20-205), and is a PSD major source. The facility is currently permitted under a PSD Permit issued on May 22, 2012.

This significant permit modification to APS's Title V (T5) permit is to incorporate the changes made in the modification of APS approved in the NSR Permit dated May 22, 2012.¹ The NSR modification addressed conversion of the site's two primary boilers (Ref. No. 001 and 002) from coal and wood fired units to unit's whose primary fuel is woody biomass.² On April 16, 2012 the Blue Ridge Regional Office (BRRO) held a public hearing about the NSR modification to accept comments on the air quality impact of the proposed source, alternatives to the source, the control technology required, and other appropriate considerations. The only comments made at the NSR hearing were in support of the project. After verbal discussions with EPA Region III, on May 22, 2012 BRRO formally responded to EPA's written comments as shown in their letter dated April 27, 2012, and issued the NSR permit for the biomass conversion.

After this current Title V permit modification the facility will remain a Title V major source; with major emissions of NO_x, CO, and total HAP.

¹ The single NSR permit document dated May 22, 2012 is a combined PSD major modification permit and a minor NSR permit (i.e., Article 6) significant amendment.

² Biomass is described more completely in Attachment A to this Statement of Basis. Also, No. 2 fuel oil and natural gas will remain the startup fuels for the site's two primary boilers.

3. COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

4. EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility are contained in the table in Section II of the T5 permit. This table represents the current emissions units at the facility as represented by APS's application information.

5. EMISSIONS INVENTORY

Emissions from the calendar year 2011 are summarized in the following tables.

	2011 Criteria Pollutant Emission in Tons/Year				
Emission Unit	VOC	CO	SO ₂	PM ₁₀	NO _x
Total	0.001	0.020	0.001	0.001	0.094

Pollutant	2011 Hazardous Air Pollutant Emission in Tons/Yr
Chlorine	0.000
HCL	0.000
HF	0.000

6. CHANGES TO EMISSION UNIT APPLICABLE REQUIREMENTS

6.1 General

6.1.1 The scope of changes in the underlying NSR permit is limited to the modification of the two primary boilers (including the associated wet ash systems) and the construction of the new biomass handling system. (See Attachment A to this Statement of Basis for a copy of the engineering analysis for the NSR permit.) Unless, otherwise noted, each change described in this statement of basis is consistent with the requirement as stated in the underlying NSR permit.

6.1.2 All references to “coal” are no longer germane are deleted. Generally, such references are replaced with “biomass.”

6.2 Primary Boilers (001, 002)

Limitations-Primary Boilers³

6.2.1 Due to the change in primary fuel from coal to woody biomass, the specified control efficiency for SO₂ is removed since there is a substantial reduction in potential to emit of SO₂, e.g., ~ 4,000 TPY reduction in uncontrolled SO₂ emissions. (See Attachment A for discussion)

6.2.2 In order to support the NSR emission calculations, the maximum hourly firing rate and the annual total heat input of the primary boilers are limited.

6.2.3 The emission limits for the primary boilers are revised to match the “after biomass conversion” operating conditions.

6.2.4 The visible emissions limit for the primary boilers is lowered from 10%, with one six-minute period not to exceed 27% to 10% with one six-minute period not to exceed 20%

6.2.5 The approved primary fuel for the primary boilers is biomass and the approved biomass is defined.

Monitoring-Primary Boilers³

6.2.6 In the previous NSR and T5 permits, CEMS were required both before and after the SO₂ air pollution control equipment in order to demonstrate compliance with the then applicable NSPS Da SO₂ percent reduction requirements. In the current underlying NSR permit, only the after APCD CEM is required since the applicable NSPS is now Db and no percent reduction requirements from that Subpart apply to APS after the biomass conversion.⁴

6.2.7 Compliance Assurance Monitoring (CAM)

6.2.7.1 With this significant modification to the facility’s T5 permit, and since they: (a) are subject to emission limitations, (b) use air pollution control devices (APCD) to achieve compliance with those limits, and (c) have pre-APCD emissions greater than 100 tons per year, the primary boilers at APS meet the definition of Pollutant Specific Emissions Units (PSEU) for NO_x and PM⁵ emissions. Generally, PSEUs are subject to the requirements of 40 CFR 64 (CAM).

³ See also Section “Streamlining-Primary Boilers” below for discussion of NSPS Db based applicable requirements

⁴ The remaining SO₂ CEM is used to demonstrate compliance with the 30-day limit.

⁵ APS has separate limits for PM, PM₁₀, and PM_{2.5} and each has a pre-control PTE > 100 tons/yr. In this Statement of Basis (SOB) all three pollutants are grouped together as “PM” unless otherwise noted.

6.2.7.2.1 **NOx:** Each of the primary boilers has its own NOx CEM and Condition III.B.2 of the current draft T5 permit requires that these monitors be used to determine compliance with the emission standard. Therefore these monitors fit the Part 64 definition of a “continuous compliance determination method” and in accordance with 40 CFR 64.2(b)(vi) the requirements of CAM do not apply to them.

6.2.7.2.2

PM: Both the underlying NSR and the current draft T5 permits require: (a) that PM emissions from the primary boilers be controlled, principally by a lime-water injection spray dryer, and a fabric filter system, and (b) that a series of “quarterly” initial stack tests for PM be performed while the primary boilers are combusting biomass. A Continuous Opacity Monitoring (COM) system for the primary boilers was required by the APS 2008 NSR permits and continues to be required in the current NSR and T5 permits. Also, continuous exhaust gas temperature monitoring between the spray dryer and the baghouse inlet provides assurance that the lime-water injection spray dryer is operating.⁶ Therefore, assuming that the tests of the primary boilers show compliance with the PM limits, site specific data will be available to demonstrate what the concurrent exhaust gas temperature and opacity are expected to be during compliant operation. Furthermore, typical failures of fabric filter systems are immediately obvious in terms of opacity. Therefore, the exhaust gas temperature monitoring system and the COM system are considered “to provide a reasonable assurance of compliance with the emissions limits” as specified in 40 CFR 64.3⁷ and their use is adequate to meet the requirements of CAM. The majority of CAM conditions are contained in Section III.B-monitoring of the Title V permit; with one condition each in Section III.C-Recordkeeping, and Section III.E-Reporting. Table 1 of Section III.B addresses the opacity the indicator, Table 2 addresses the supplementary actions to be taken by the source in the case of an opacity excursion⁸, and Table 3 addresses the exhaust gas temperature indicator.

6.2.7.2.3 The language of the Section III-CAM conditions is from the currently approved state Title V permit boilerplate.

Recordkeeping-Primary Boilers³

6.2.8 Records of specified fuel quality data for as-fired biomass are required.

6.2.9 Since the same approved oil fuel is used for startup of the primary boilers, and operation of the auxiliary boiler and the diesel engines, fuel oil quality data requirements are moved to Condition IX.A.9, Facility Wide Conditions.

6.2.10 The following records for the primary boilers must be kept: maximum firing rate, annual

⁶ This temperature monitoring system is in place to insure that the baghouse is protected from damage due to elevated exhaust gas temperatures

⁷ Monitoring design criteria.

⁸ The supplementary provisions are considered necessary because there is a single COM in the common stack serving the two primary boilers.

heat input, continuous emission monitoring results, stack test results, records of primary and auxiliary boiler concurrent operation, and biomass fuel quality data.

6.2.11 Maintenance and operating procedures (including schedules, inventory of spare parts, operating procedures, and training) are moved to Condition **IX.A.10**, Facility Wide Conditions.

Testing-Primary Boilers³

6.2.12 Initial stack tests for SO₂, NO_x, CO, VOC, Sulfuric Acid Mist and Fluorides are required.

6.2.13 Four, “quarterly” initial stack tests are required for each of the following: Filterable PM, Total PM, Filterable PM₁₀, Total PM₁₀, Total PM_{2.5}; including concurrent fuel quality analyses and Visible Emissions Evaluations (by Method 9 or COM).

6.2.14 The general duty requirement that the source modify an emissions unit so as to allow for emissions testing is moved to Condition **IX.A.7**, Facility Wide Conditions.

Reporting-Primary Boilers³

6.2.15 Prior to the biomass conversion project, the primary boilers were coal fired and therefore subject to NSPS Da. This is no longer germane and the NSPS Da recordkeeping requirements are removed.

Streamlining-Primary Boilers

6.2.15 General: In their letter dated 2/21/12, EPA Region III concluded that “...NSPS Da will no longer apply to this operation [the primary boilers] as wood (biomass), under Section 60.40Da, is not considered, and not defined, as a fossil fuel but Subpart Db will apply...” As discussed in this section of the SOB, generally compliance with the standards that resulted from the NSR process insures compliance with the NSPS Db applicable requirement and therefore the NSPS requirement is “streamlined out” of the current Title V permit. (In accordance with current guidance, citation of the NSPS requirement is included in the relevant T5 condition.) In several cases noted below, applicable requirements from NSPS Db are explicitly added to the current Title V permit.

6.2.16 SO₂ standards (NSPS 60.42b)

Biomass combustion at APS is not subject to SO₂ standards. Biomass is not among the fuels for which there are SO₂ emission limits in 60.42b(a) through (d), and since the biomass potential SO₂ emission rate is less than 0.32 lb/MMBtu⁹ the primary boilers are exempt from the percent reduction requirements in 60.42b(k)¹⁰.

The allowable oil for the primary boilers fits the NSPS Db definition of Very Low Sulfur Oil (VLSO). For units that fire VLSO, the only NSPS Db applicable requirements are the reporting and recordkeeping requirements of 40 CFR 40.49b(r). Citation of 40 CFR 60.42b is included

⁹ SO₂ from biomass is limited to 0.0125 lb/MMBtu

¹⁰ See 60.42b(k)(2)

Conditions **III.A.2** (SO₂ APCD requirement), and **III.A.6** (Primary Boiler emissions limits).

6.2.17 PM standards (NSPS 60.43b)

The PM¹¹ limit that resulted from the NSR review is 0.019 lb/MMBtu: while the most stringent limit in NSPS Db is 0.085 lb/MMBtu. Also, opacity from the NSR review is 10%, with one 6-minute period ≤ 20%; while the NSPS requirement is 20%, with one 6-minute period ≤ 27%. Citation of 40 CFR 60.43b is included Conditions **III.A.1** (PM APCD requirement), **III.A.6** (Primary Boiler emissions limits), and **III.A.7** (Primary Boiler opacity limits)

6.2.18 NO_x standards (NSPS 60.44b)

The NO_x limit that resulted from the NSR review is 0.135 lb/MMBtu: while the most stringent limit for biomass combustion in NSPS Db is 0.2 lb/MMBtu. Citation of 40 CFR 60.44b is included Condition, **III.A.6** (Primary Boiler emissions limits)

The primary boiler allowable startup fuels are natural gas and fuel oil, and the startup burner size is 27.5 MMBtu/hr. The minimum statement of the rated capacity is 379 MMBtu/hr¹²; with the resulting effective annual capacity factor for fossil fuel ~ 7% (i.e., 27.5/379). Per NSPS 60.44b, units with an annual capacity factor less than 10% are not subject to the subpart NO_x standards.

6.2.19 SO₂ compliance & testing (NSPS 60.45b)

Since biomass combustion is not subject to any 60.42b SO₂ standards, it follows that there are no compliance and testing requirements for this fuel.

For units that fire only VLISO, there are no compliance and testing requirements. Citation of 40 CFR 60.45b is included Conditions **III.A.10** (maximum fuel oil sulfur content ≤ 0.3%),

6.2.20 PM& NO_x compliance & testing (NSPS 60.46b)

6.2.20.1 PM/Opacity Compliance with the NSR condition to perform the four, quarterly initial performance tests for PM insures compliance with the NSPS Db PM testing requirements in 40 CFR 60.46b(b). Citation of 40 CFR 60.46b for PM is included Conditions **III.D.2** (PM testing).

Compliance with the NSR conditions for concurrent, initial Visible Emission Evaluations (VEE) insure compliance with the opacity testing requirements in 40 CFR 60.46b(d)(7). Citation of 40 CFR 60.46b for opacity is included Conditions **III.D.3** (Concurrent VEE), and **III.D.4** (use of COM in lieu of VEE).

6.2.20.2 NO_x Compliance with the NSR requirement to have a NO_x CEM system for

¹¹ The regulated pollutant in NSPS Db is PM. Therefore, in contrast to Footnote **5**, in this section (i.e., 6.2.16) the term PM does NOT include PM₁₀ or PM_{2.5}.

¹² In their NSR permit application, APS represent the long term average hourly capacity as 379 MMBtu/hr, based on firing biomass with ~ 50% moisture.

the primary boilers insures compliance with the NSPS Db NO_x compliance methods and procedures requirements in 40 CFR 60.46b(b). Citation of 40 CFR 60.46b for NO_x is included Condition **III.B.1** (Primary boiler CEM systems)

6.2.21 SO₂ monitoring (NSPS 60.47b)

The allowable oil for the primary boilers fits the NSPS Db definition of Very Low Sulfur Oil (VLSO). For units that fire VLSO, the only NSPS Db applicable requirements are the reporting and recordkeeping requirements of 40 CFR 40.49b(r). Citation of 40 CFR 60.47b is included Condition **III.C.2.i** (recordkeeping for fuel oil supplier certifications)

6.2.22 PM & NO_x monitoring (NSPS 60.48b)

6.2.22.1 PM Compliance with the NSR requirement to have a COM system for the primary boilers insures compliance with the NSPS Db PM monitoring requirements in 40 CFR 60.48b(a) for sources subject to the opacity standard. Citation of 40 CFR 60.48b for PM is included Conditions **III.B.1** (Primary boiler CEM systems)

6.2.22.2 NO_x Compliance with the NSR requirement to have a NO_x CEM system for the primary boilers insures compliance with the NSPS Db NO_x monitoring requirements in 40 CFR 60.48b(b). Citation of 40 CFR 60.48b for NO_x is included Conditions **III.B.1** (Primary boiler CEM systems)

6.2.23 Reporting & Recordkeeping (NSPS 60.49b)

6.2.23.1 60.49b(a) requires that an affected facility must submit notification of initial startup. Compliance with the NSR notification requirements insures compliance with the 60.49b(a) requirement. Citation of 40 CFR 60.49b for this notification is included Conditions **IX.A.8.b** (Facility Wide Conditions-Notifications)

6.2.23.2 60.49b(b) requires submittal of (1) (NSPS required) initial performance test data and (2) CEM performance evaluation data. At APS, NSPS required initial performance tests are required for PM and NO_x, and in both cases the NSR condition requires submittal of the test results. Similarly, performance evaluations are required for all continuous monitoring systems and the NSR condition requires submittal of the performance evaluation reports. Citation of 40 CFR 60.49b for these submittals is included Conditions **III.B.9** (CEM performance evaluations), and **III.D.1 & 2** (Initial Performance Tests)

6.2.23.3 60.49b(d) requires records of the amounts of each fuel combusted each day. Compliance with the NSR recordkeeping requirements insures compliance with the 60.49b(d) requirement. Citation of 40 CFR 60.49b for these is included Conditions **III.C.2.h** (Primary boiler recordkeeping)

6.2.23.4 60.49b(o) requires all records required by NSPS Db to be maintained for 2 years. The current NSR permit requires records to be kept for 5 years. Citation of 40 CFR 60.49b for these is included Conditions **III.C.2** (Primary boiler recordkeeping)

6.2.23.5 60.49b(r) requires demonstration that fuel combusted meets the definition of VLSO. Compliance with the NSR recordkeeping requirements insures compliance with the 60.49b(r) requirement. Citation of 40 CFR 60.49b for these is included Conditions **III.C.2.i** (Primary boiler recordkeeping)

6.2.23.6 60.49b(w) specifies the NSPS Db reporting period to be 6 months. Compliance with the general duty requirement to report excess emissions quarterly for continuous monitoring systems used directly for compliance determinations insures compliance with the 60.49b(w) requirement.

6.2.24 The following NSPS Db applicable reporting and recordkeeping requirements have been added to Title V permit. See Conditions **III.C.2.f & g**

Reports

- 60.49b(h) => an affected facility shall submit excess emissions reports for opacity and NO_x
- 60.49b(i) => an affected facility shall report the steam generating unit operating day data required to be recorded under 60.49b(g)

Records

- 60.49b(f) => an affected facility subject to the opacity standard shall maintain records of opacity
- 60.49b(g) => an affected facility subject to the NO_x standards shall maintain records of specified data for each steam generating unit operating day

6.3 Auxiliary Boiler (003)

Limitations-Auxiliary Boilers

6.3.1 Since the same approved oil fuel is used for the primary boilers, the auxiliary boiler, and the diesel engines, fuel oil quality data requirements are moved to Condition **IX.A.9**, Facility Wide Conditions.

6.3.2 The NSR permit statement of the minimum stack height for the auxiliary boiler which originated in the 1990 action is added.

Monitoring-Auxiliary Boilers

6.3.3 While the scope of the monitoring applicable requirements has not changed, the language is edited to match that of the current, underlying (2012) NSR permit (e.g., the former Title V permit (2008) did not include some portions of the underlying NSR permit (2008) condition if that portion may have been completed. The 2012 version does.)

Recordkeeping-Auxiliary Boilers

6.3.4 Maintenance and operating procedures (including schedules, inventory of spare parts, operating procedures, and training) are moved to Condition **IX.A.10**, Facility Wide Conditions.

Testing-Auxiliary Boilers

6.3.5 The general duty requirement that the source modify an emissions unit so as to allow for emissions testing is moved to Condition IX.A.7, Facility Wide Conditions.

Reporting & Streamling-Auxiliary Boilers

No changes

6.4 Combined Boilers

Limitations¹³

6.4.1 The emission limits for the allowable combined operation of the primary boiler and the auxiliary boiler are revised to match the “after biomass conversion” operating conditions of the primary boilers.

6.5 Diesel Engines (005 & 006)

No changes; except the general duty requirement that the source modify an emissions unit so as to allow for emissions testing is moved to Condition IX.A.7, Facility Wide Conditions.

6.6 Biomass, Ash & Lime Handling Requirements - (010 through 017, 020 through 023, 025, and 101 through 104-11)

Limitations-Biomass, Ash & Lime Handling

6.6.1 General: The emission unit descriptions and APCD's for the coal fuel handling system are replaced by those for the biomass handling system

6.6.2 As part of the biomass conversion project, three formerly dry dust handling systems are changed to systems handling wet dust (i.e., systems controlled by quenching/saturating with water)

6.6.3 The annual throughput of the biomass system is limited in order to support the NSR emission calculations

6.6.4 The emission limits for the unchanged material handling systems and those for the new biomass handling system are revised to match the “after biomass conversion” operating conditions.

Monitoring-Biomass, Ash & Lime Handling

No change

Recordkeeping-Biomass, Ash & Lime Handling

6.6.6 Records of the annual throughput of the biomass system are required in order to determine compliance with the NSR throughput limit.

¹³ Neither the 2008 nor the 2012 versions of the Title V permit include Monitoring, Recordkeeping, Testing, Reporting or Streamline conditions.

Testing- Biomass, Ash & Lime Handling

6.6.7 The general duty requirement that the source modify an emissions unit so as to allow for emissions testing is moved to Condition IX.A.7, Facility Wide Conditions.

Reporting- Biomass, Ash & Lime Handling

6.6.8 Reporting required by NSPS Y, coal preparation and processing plants, is no longer germane and is deleted.

6.7 Distillate Fuel Oil Storage Tank Requirements - (024)

No changes

6.8 Facility Wide Conditions

6.8.1 Fugitive emissions from paved roads must be actively controlled by methods such as wetting or sweeping.

6.8.2 The general duty requirement that the source modify an emissions unit so as to allow for emissions testing which was distributed across the former Title V permit is consolidated in Condition IX.A.7.

6.8.3 The required notifications from the underlying NSR permit are added to the current Title V permit.

6.8.4 Since the same approved fuel oil is used for the primary boilers, the auxiliary boiler, and the diesel engines, fuel oil quality data requirements are consolidated in Condition IX.A.9.

6.8.5 Maintenance and operating procedures (including schedules, inventory of spare parts, operating procedures, and training) are moved to Condition IX.A.10.

6.9 Title IV-Acid Rain Requirements

No change.

6.10 Clean Air Interstate Rule (CAIR) Requirements

No change¹⁴. Although the legal status of CAIR is currently in flux, agency guidance is that CAIR is currently the appropriate applicable emission trading program.

7. GENERAL CONDITIONS

7.1 The general conditions and language are updated to match the currently approved state Title V permit boilerplate.

¹⁴ Even though the primary boilers are no longer fossil fired units for NSPS purposes, since they have fired fossil fuel since 2005 they remain fossil fired units subject to CAIR.

7.2 Condition 123 from the underlying NSR permit (duty to reduce level of operation upon request) is added to the general conditions

8. STATE ONLY APPLICABLE REQUIREMENTS

None

9. FUTURE APPLICABLE REQUIREMENTS

APS is a major source of HAP and when the revisions to the Boiler MACT are promulgated it is expected that primary and auxiliary boiler will be subject to those standards.

10. INAPPLICABLE REQUIREMENTS

10.1 NSPS Y, coal preparation and processing plants, is no longer germane.

10.2 As specified in the permit application, there is no crushing associated with the limestone process so NSPS OOO does not apply.

10.3 As discussed in the engineering analysis for May 22, 2012 NSR permit (see Attachment A to this SOB) there are no applicable GHG permitting requirements at this time.

11. COMPLIANCE PLAN

None

12. INSIGNIFICANT EMISSION UNITS

No changes

13. CONFIDENTIAL INFORMATION

None

14. PUBLIC PARTICIPATION

The draft/proposed permit will be placed on public notice in the Lynchburg News & Advance from November 30, 2012 to January 2, 2013. EPA's concurrent 45 day review period will end on January 14, 2013.

Attachments

Attachment A Engineering analysis for May 22, 2012 NSR permit (without attachments)